

## Materials Science and Technology Division

# personal profile

# New challenges await Ricardo Schwarz

**R**icardo Schwarz has garnered many honors during his career, yet he's ready to tackle new challenges.

Schwarz is a Los Alamos National Laboratory fellow, fellow of the American Society for Metals as well as The Mineral, Metals and Materials Society, recipient of the Humboldt Research Award for Senior U.S. Scientists, has an honorary doctorate from Tamere University in Finland, and is a recently elected member of the National Academy of Engineering.

From the lack of U.S. students pursuing scientific careers to the role of scientists in setting the nation's scientific and technological agenda, Schwarz has many issues on his mind. "You collect these ideas as you become more experienced," he said.

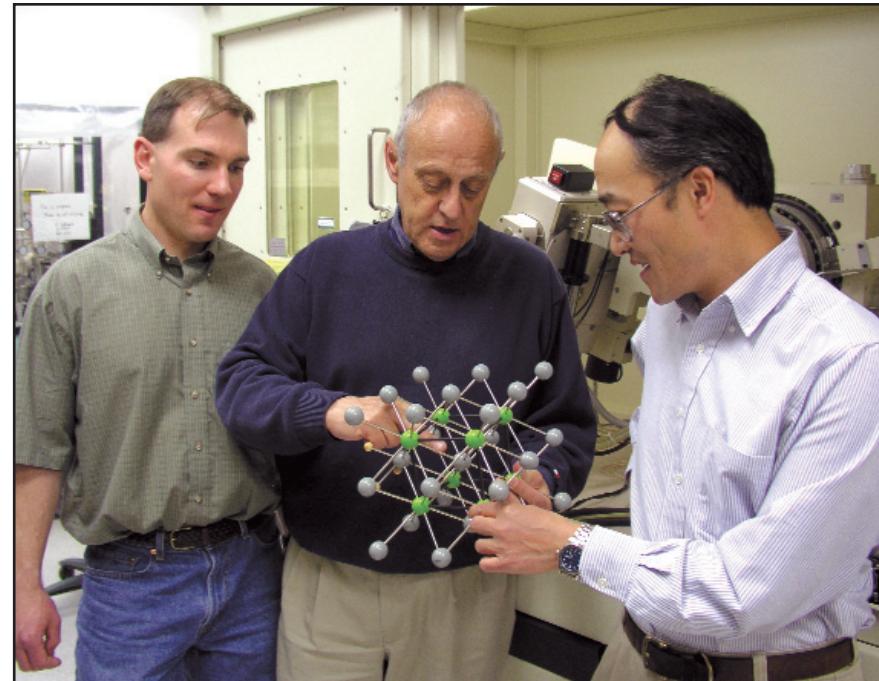
Although he won't be inducted into the NAE until October, the scientist, a member of the Materials Science and Technology Division's Structure/Property Relations Group (MST-8), is already poring over Academy publications. The mission of the 2,000 member nonprofit organization is to promote the technological welfare of the nation by marshaling the knowledge and insights of eminent members of the engineering profession.

"I'm extremely interested in getting involved (in the NAE)," he said, thumbing through one of the many NAE reports he has close at hand these days. "There are so many things the does that relate to the needs of the Laboratory."

And in turn, Schwarz believes strongly that Los Alamos has a crucial role to play in the nation's scientific and technology advancement. "There are things that no private industry or corporation can do, but a national lab can," he said. With the transition to a new Laboratory contractor underway, Schwarz is optimistic about the changes in store—from reorganized and more dynamic divisions to the incoming Laboratory director, who impressed Schwarz with his vision for the role of the Laboratory in guiding the nation's scientific agenda.

### Adventures in physics

Born and raised in Chile, Schwarz earned an engineering degree from the Universidad de



Chile, but an assistantship in the crystallography lab showed the young researcher the distinction between engineering and physics. "It is an adventure in thinking all the time," Schwarz said, describing the latter.

A Fulbright Scholarship took him to the University of Virginia where he earned his doctorate in physics. A postdoctoral appointment at the University of Illinois was followed by several years at Illinois' Argonne National Laboratory.

Schwarz came to Los Alamos in 1985 to pursue his interest in amorphous alloys as a member of the Center for Materials Science.

The Center, formed in 1981 by Siegfried Hecker, was established to foster ties between LANL material scientists working on programmatic issues with the national materials science community. "I had all the support I needed for my scientific research," he said.

Schwarz and his wife Fanny, also immediately took to northern New Mexico's striking landscape, temperate weather, and cultural mix. "I think this is one of the best places to live in the United States in terms of the environment, the beauty of the land, the weather...And we have these three beautiful cultures here." The couple

**Los Alamos is "a great place" for younger researchers to pursue their ideas, said Ricardo Schwarz, center. Schwarz, who came to the Laboratory in 1985, will be inducted into the National Academy of Engineering this fall. Here, he is joined by postdoctoral researcher Doug Safarik and staff member Tongde Shen in MST-8's x-ray diffraction laboratory.**

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resides in Santa Fe.

### **Supporting Laboratory mission**

At the Laboratory, in addition to making seminal advances in materials and analytical techniques, Schwarz has published in prestigious journals, mentored younger researchers, and worked for the welfare of his fellow scientists. In particular, Schwarz was a member of the Science and Engineering Advisory Council which drafted Laboratory Policy AM 730, which addresses intellectual freedom and the rights of the researcher.

At Los Alamos, Schwarz said, there is "a tremendous amount of liberty to fulfill your own ideas." Yet, with the freedom to pursue individual goals comes a challenge.

"At this institution of 8,000 people there is such a diversity of research—from weapons to creating artificial limbs," he said. The challenge, according to Schwarz, lies not in what to pursue, but rather, to focus. Researchers must "see the beauty in the science that supports the mission," he said. "There are many real scientific problems and if you think about those problems you can help the mission."

Recently Schwarz has become more involved in mission-related materials problems, working with applied scientists seeking solutions. His current research interests include the synthesis and properties of metastable alloys, hydrogen behavior in metals



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### **Ricardo Schwarz**

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and metal hydrides,  $^3\text{He}$  bubble formation and swelling in tritiated metals, and ferromagnetism in nanocrystalline alloys. "For me it is as much fun to work on something very esoteric as it is to investigate a materials issue in support of the mission of the Lab," he said.

### **Enthusiastic mentor**

Schwarz "is very excited about his work and has so much enthusiasm and energy for science that it's been tremendous to work with him," said Douglas Safarik, Schwarz's postdoctoral researcher who until recently was focusing on the mechanical properties of metallic glasses, but lately has moved to more applied work of hydrogen storage related to energy and weapons issues.

"Ricardo really is a true scientist in every sense of the word in that he is very open-minded about new ideas no matter how much they may conflict with his previous beliefs."

"He's also an incredibly careful experimentalist," said Safarik, explaining that Schwarz thoroughly considers such details as sample preparation, execution of measurements, and verifying properly working equipment.

"It has been incredibly valuable to learn this from somebody as experienced and successful as Ricardo."

— By Karen E. Kippen, MST Communications